State of California

DEPARTMENT OF WATER RESOURCES

The Resources Agency

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OFFICE MEMO

TO: Michael Norris CALFED	**DATE:** February 5, 1996
	SUBJECT: Central District's Geographic Information System Description
FROM: Rod Gonzalez RG. Flood Protection and Geographic Information Branch	

On Friday morning, January 26, 1996, you called me inquiring as to the spatial data contained in our Geographic Information System, specifically for the Sacramento-San Joaquin Delta. You are interested in infrastructure data and habitat type distribution.

While we do not have all the infrastructure information currently contained in a GIS spatial database, we do have information regarding major and minor roads and railroad lines contained in digital drawing files which were obtained from Teale Data Center. Although this data does not include gas fields, pipelines, and transmission lines of which you are interested, the data can be digitized, as needed.

In regards to habitat distribution identified in the Delta, a study was performed by Harding Lawson Associates for the Department of Fish and Game which identified habitat types on levees in 1987 and 1991. HLA published the results of this study in *Report Findings, Sacramento-San Joaquin Delta Levees Investigation Pursuant to the Delta Flood Protection Act of 1988*, dated April 30, 1994. All of the data they collected and analyzed was interpreted from aerial photographs and intermittently ground-truthed. HLA may be contacted for any digital files related to the study.

In 1987, U.S. Fish and Wildlife Service and DFG staff conducted extensive waterborne surveys of levee vegetation in the Delta. Their results were recorded on mylar maps that overlay the Corps of Engineers' *Sacramento-San Joaquin Delta Environmental Atlas, July 1979.* In 1992, DWR's Central District and DFG staff used an electronic planimeter to measure the mapped habitat areas and calculate the total acres of each habitat type. This exercise captured information for about 80 percent of the Delta's levees. Because of the different methodologies used for the two studies and the inherent state of flux in vegetation distribution on the levees over time, the studies do not yield the same results.

More current habitat distribution information is contained in the environmental assessments prepared by reclamation districts as a requisite for participation in SB 34. The assessments are submitted during the program application process and are on file at Central District. This information has not yet been digitized into Central District's GIS. However, time could be allocated to perform this task.

Also, per your request, I am providing you with information regarding the GIS spatial database here at Central District. Our GIS is flexible and adaptable for other program needs. We are currently providing GIS services for the Environmental Services Office's 1993-94 Suisun Bay adult salmon study. This and other spatial data we manage appear to support CALFED's program needs. We would like to work with CALFED to provide any needed GIS services. We can provide time and cost estimates for preparing spatial data products for CALFED, as needed.

As you are aware, Central District has recently undergone a reorganization; and as a result, the Geographic Information Section was created. The purpose of the Geographic Information Section is to provide GIS services for Central District, the Department, and other agency programs within the Central District geographic area. The Geographic Information Section staff currently includes Kent Nelson, Ron Landingham, and myself.

Among other things, the Central District Flood Protection and Geographic Information Branch is responsible for the maintenance and analysis of spatial data under the SB 34 Delta Levee Subvention Program and work related to the SB 1065 Master Environmental Assessment. To that end, Central District acquired a GIS which utilizes Geo/SQL (Geo/SQL Corporation, Calgary, Alberta, Canada) as the application software.

Geo/SQL, which stands for Geographic Structured Query Language, operates on a personal computer platform and combines indexing spatial objects with SQL database management. Geo/SQL uses AutoCAD (Autodesk, Inc.) as its graphical front-end and links with a SQL relational database management system (RDBMS) to form a spatial database.

The Flood Protection and Geographic Information Branch uses Geo/SQL GIS to locate and identify habitat of special status species throughout the Sacramento-San Joaquin Delta. By querying the information contained in the database, we are able to view the islands and tracts in the Delta that participate in SB 34, including the locations, names, and pertinent data of special status species and habitats on those islands and tracts. This information is used to prepare map illustrations attached as exhibits to the Master Environmental Assessment, the annual SB 34 Legislative report, and other reports, as needed.

The database is updated as new information is obtained using the AutoCAD interface and a digitizing tablet. Drawing entities consisting of points, lines, polylines, or polygons are created and then tagged with data associated with those entities. The tagged data is inserted into a spatial database and stored for future use. Since Geo/SQL utilizes the AutoCAD graphical interface, operation of the GIS is nearly seamless to the user. To utilize raster images, third-party products, such as ColorView (Peak Geo-Design, Inc.) or CAD Overlay GSX (Softdesk Imaging Group), allow raster images to be inserted as a layer in AutoCAD.

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Importing and exporting drawing files to and from Geo/SQL and the Division of Planning's GRASS GIS is not difficult since translation software for GRASS-to-AutoCAD is available. Importing and exporting attribute data between Geo/SQL and GRASS can be accomplished by formatting data as attribute blocks.

I have attached a technical description of the Central District GIS program, several copies of sample map illustrations, and a copy of an internal memo to Dennis Letl from me regarding my July 8, 1993 conversation with MaryRose Repine.

If you have further questions, please contact Kent Nelson at (916) 227-7577, Ron Landingham at (916) 227-7610, or me at (916) 227-7575.

Attachments

cc: Victor Pacheco
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